Boroditsky 2000-0578A

IN THE CLAIMS:

1. (Currently Amended) A system for providing high connectivity communications over a composite packet-switched optical ring network that includes a plurality of nodes, with at least one of the nodes comprising:

~~a plurality of nodes, each node further comprising,~~

an optical crossbar switch connected to said packet-switched optical ring network;

a rapidly tunable laser for serially generating a plurality of packets, each packet being generated at a different wavelength; and

a ~~wavelength~~ stacker for stacking said plurality of serially generated packets to form a composite packet, which stacker is interposed between the tunable laser and the crossbar switch, through which the composite packet is injected into the network.

2. (Currently Amended) The system according to claim 1, wherein said wavelength stacker further comprises:

a ~~plurality~~ pair of optical circulators; and

a plurality of fiber Bragg gratings (FBGs) connected to and sandwiched between said plurality of optical circulators, wherein said plurality of FBGs are serially interconnected in a manner that imparts a preset signal flow delay between adjacent FBGs, and the serial interconnection interposed ~~cascaded and equally spaced~~ between said ~~plurality~~ pair of optical circulators.

3. (Original) The system according to claim 1, wherein said stacker also operates as an unstacker to recover and re-serialize said plurality of packets from said composite packet.

4. (Original) The system according to claim 1, wherein said optical crossbar switch facilitates a composite packet in a photonic time slot that is being propagated on said packet-switched optical ring network being dropped from said packet-switched optical ring network at a destination node.

5. (Original) The system according to claim 1, wherein said optical crossbar switch facilitates said composite packet formed by said stacker being assigned a photonic time slot and added to said packet-switched optical ring network.

6. (Original) The system according to claim 1, wherein said optical crossbar switch is wavelength independent.

7. (Original) The system according to claim 1, wherein said packet-switched optical ring network is a point-to-point network.

8. (Original) The system according to claim 1, wherein said optical crossbar switch facilitates a composite packet in a photonic time slot bypassing a given node depending on a position of said optical switch.

9. (Original) The system according to claim 4, wherein said dropped composite packet in said photonic time slot is further distributed to a plurality of user sites connected to said destination node by using Wavelength Division Multiplexing (WDM) techniques according to said constituent wavelengths of said composite packet.

10. (Original) The system according to claim 4, wherein said dropped composite packet in said photonic time slot is further detected in parallel.

11. (Currently Amended) The system according to claim 3 [[5]], wherein said FBGs within said stacker, operating also as said unstacker, are connected to permit reinsertion of a wavelength not matching a wavelength of any of said FBGs into said optical ring network thereby causing said wavelength to ~~a fiber Bragg grating (FBG)~~ bypass[[es]] the node transparently.

12. (Currently Amended) A system for providing high connectivity communications over a packet-switched optical ring network having a plurality of nodes connected thereto comprising ~~the steps of~~:

~~means for creating, at one of said plurality of nodes, a composite packet;~~

means for dropping from said packet-switched optical ring network, at a first node of said plurality of nodes, a composite packet being routed over said packet-switched optical ring network, where said first node is a destination of said dropped packet ~~destined for said one of a plurality of nodes of said packet-switched optical ring network from said packet-switched optical ring network~~;

means for creating a composite packet at said first node;

means at said first node for, simultaneously with the dropping of said composite packet by said means for dropping, adding into said packet-switched optical ring network ~~to said photonic time slot~~ said composite packet created by said means for creating ~~one of said plurality of nodes into said packet-switched optical ring network~~; and

means for routing said ~~time slot comprising said~~ composite packet added into said packet-switched optical ring network to a destination node of said plurality of nodes that is other than said first node.

13. (Currently Amended) The system according to claim 12, wherein said means for dropping and means for simultaneously adding are intercoupled to allow a wavelength not matching a wavelength of a fiber Bragg grating (FBG) within said means for dropping and means for simultaneously adding to pass[[es]] through the node transparently.

14. (New) A system for providing high connectivity communications over a composite packet-switched optical ring network that includes links and nodes interposed that interconnect said links, with at least one of the nodes comprising:

an optical crossbar switch having at least a first input directly connected to an incoming link of said network, a second input, a first output that is directly connected to an outgoing link of said network, and a second output;

a rapidly tunable laser for serially generating a plurality of packets, each packet being generated at a different wavelength; and

a stacker, interposed between said laser and said second input of said crossbar switch, for stacking said plurality of serially generated packets to form a composite packet that is applied to said second input.